

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): An apparatus for detecting a different kind of object among objects using a plane spectrometer, comprising

a conveyer means for conveying a plurality of objects;

an irradiating means for irradiating near-infrared rays to the plurality of objects conveyed by ~~means of~~ the conveyer means;

a plane spectrometer performing plane spectroscopy for a reflected light of [[the]] near-infrared rays reflected from the plurality of objects, to which the near-infrared rays are irradiated with the irradiating means;

an imaging means for converting a plane spectrogram of the reflected light produced through the plane spectrometer into an electric signal by means of a near-infrared ray camera; and

an analyzing means for detecting a different kind of object from the plurality of objects using a method of main component analysis upon obtaining spectral data of the reflected light by means of analyzing the electric signal obtained with the imaging means, [[.]]

wherein the analyzing means is configured to perform

a wavelength axis averaging processing for averaging spectral data in a direction of the wavelength axis;

an interpolation processing for interpolating the spectral data using Lagrangian secondary interpolation;

a measuring position optimization processing for detecting a center position of the object by detecting an edge of the object upon accumulating the spectral data in a direction of a spatial axis;

a spatial axis averaging processing for obtaining an average value of each wavelength at a plurality of points in a vicinity of the center position of the object detected by the measuring position optimization processing;

a differentiation processing for performing a first differentiation or a second differentiation for the spectral data;

a main component score calculation processing for calculating the main component score by calculating previously obtained loading vector data and the spectral data obtained from the above-listed processes; and

a determination processing for determining whether to be a different kind of object or a same kind of object on a basis of the calculated main component score.

Claim 2 (Canceled).

Claim 3 (Currently Amended): [[An]] The apparatus according to Claim [[2]] 1,
wherein the wavelength axis averaging processing of the analyzing means performs at least any of

a preprocessing for averaging the spectral data;

a preprocessing for standardizing the spectral data on [[the]] a basis of a ratio of the spectral data to a predetermined value;

a preprocessing for standardizing the spectral data on ~~[[the]]~~ a basis of a difference between the spectral data and a predetermined data; or

the wavelength axis averaging processing for forming a moving average of the spectral data in the direction of the wavelength axis.

Claim 4 (Currently Amended): ~~[[An]]~~ The apparatus according to ~~any one of Claims Claim 1 through 3~~, wherein the analyzing means is configured to perform a conversion processing for smoothing the spectral data.

Claim 5 (Currently Amended): ~~[[An]]~~ The apparatus according to ~~any one of Claims Claim 1 through 4~~, wherein the analyzing means is configured to perform a correction processing for the spectral data by means of a MSC (Multiplicative scatter correction) method.

Claim 6 (Currently Amended): ~~[[An]]~~ The apparatus according to ~~any one of Claims Claim 1 through 5~~, wherein the analyzing means is configured to detect abnormality of the object in a case that ~~[[the]]~~ an edge exceeding a predetermined threshold cannot be detected in the measuring position optimization processing for detecting the center position of the object by ~~means of~~ detecting the edge of the object upon accumulating the spectral data in the direction of the spatial axis.

Claim 7 (Currently Amended): ~~[[An]] The apparatus according to any one of Claims~~
~~Claim 1 through 6~~, wherein the analyzing means is configured to perform the main
component analysis for the object at each ~~of the lines~~ line being conveyed in multiple lines,
using the loading vector data created at each line ~~of the lines~~.

Claim 8 (Currently Amended): ~~[[An]] The apparatus according to any one of Claims~~
~~Claim 1 through 7~~, wherein the analyzing means is configured to perform the main
component analysis selecting only data of a predetermined wavelength band in the spectral
data.

Claim 9 (Currently Amended): ~~[[An]] The apparatus according to any one of Claims~~
~~Claim 1 through 8~~, wherein the analyzing means is configured to perform a conditional
branching processing while repeating for two or more times upon changing a condition of the
main component analysis.

Claim 10 (Currently Amended): ~~[[An]] The apparatus according to any one of Claims~~
~~Claim 1 through 9~~, wherein the imaging means is a rolling-type near-infrared ray camera, the
rolling-type near-infrared ray camera having a camera rotating mechanism whereby the
rolling-type near-infrared ray camera can be rotated around a shaft in parallel with a light axis
thereof.

Claim 11 (Currently Amended): ~~[[An]] The apparatus according to any one of Claims~~
Claim 1 through 10, wherein the conveying means comprises a sheet-like conveying device
for conveying ~~[[the]]~~ objects, the sheet-like conveying device having a flap-inhibitor for
preventing flap of the object by means of pressing a peripheral portion of the sheet-like
conveying device around the object to be conveyed.

Claim 12 (Currently Amended): ~~[[An]] The apparatus according to any one of Claims~~
Claim 1 through 11, wherein a light volume compensator having a predetermined reflectance
property is disposed at a position within a visual field of the imaging means.